Before the

FEDERAL COMMUNICATIONS COMMISSION

In the Matter of:	)	
	)	
Amendment of Part 97 of the Commission's	)	RM-11306
	)	
Rules Governing the Amateur Radio Services	)	

Comments in Support of RM-11306

By

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1. BACKGROUND AND INTRODUCTION

I have been a radio amateur since 1962 and currently hold the Amateur call sign KN6KB. I have a Masters degree in electrical engineering with specialization in communications and computers. I am a member of the ARRL, and have recently served on an ARRL committee investigating the use of digital amateur radio use for emergency communications. I currently operate a station using SSB and digital modes (Pactor, Packet, PSK, MFSK and others in the amateur bands from 3.5 MHz to 441 MHz. My professional work included 3 years as an engineering co-op at the R.L. Drake Company (Amateur Radios) and work with Raytheon, Honeywell and Itek Applied Technology on military computers and microwave receivers. I co-founded and served as Vice President of Engineering for two successful Silicon Valley test equipment companies. I now do Windows programming and engineering consulting for specialized mixed signal chip design. I have no financial interest in the outcome of the proposed rulemaking and have no ownership of any company involved in amateur radio.

2. DISCUSSION

These comments are intended to fully support the subject ARRL petition for rule making. The ARRL petition strikes a reasonable compromise between complex band segmentation by operating mode/application and simple no segmentation schemes as proposed in RM-11305. The proposed new rule will give a degree of interference protection by segmenting modes and modulation schemes which differ significantly in bandwidth, while still providing the flexibility to accommodate new modes and operating practices that are necessary to allow amateur radio to remain a viable experimental platform for those that wish to learn and advance radio communications. Specifically, the proposal will provide the following improvements over the current complex and rigid segmentation by mode/application rules.

1. **More Freedom to Experiment**. Segmenting using easily measured bandwidth (e.g. PC sound card and easily available software) provides the experimenting amateur adequate available spectrum for quick and legal testing and evaluating of new modulation schemes without the need for STAs (Special Temporary Authorization). The use of computers and Digital Signal Processing offer one of the most promising opportunities for communications experimentation in the Amateur service, and will allow it to maintain its place with the rest of the communications industry.
2. **Interference reduction.** Separation by bandwidth takes advantage of the well known good operating practice of using the appropriate receiver bandwidth and pass band control (e.g. notch filters) to reduce interference from unwanted signals. Of course poor operating practices (e.g. wide open receivers to view spectrum while communicating with narrow band modes) may still result in adjacent channel interference from strong adjacent signals, regardless of signal bandwidth or operating mode.

3. **Freedom from Application Limitations.** The segmentation by application (voice, data, image, etc) does not represent the needs of modern communication where voice, (analog or digital) data, text, or images may be intermixed to achieve the desired communication. The current rules now support contradiction and create confusion. As an example, allowing a digital image to be sent in an "image" segment but preventing digital data transfer (near the same bandwidth) in the same transmission. In practice these rules are often incompatible with other countries using simpler band segmentation regulation.
4. **Compatibility with other countries.** Many countries have or are moving toward minimal or no regulation of amateur bands with respect to mode, content or bandwidth. Adopting RM-11306 will minimize the conflicts and rule confusion involving communications across national boundaries.
5. **Flexibility of placement and use of Automated (BBS) type systems.**

The proliferation of computers and popularity of "semi-automated" (local or remote control per Part 97.221) message systems (where a live operator initiates a session with an automatically controlled station effectively becoming its control operator) has prompted some to try and promote rules to force such systems into specific limited segments. But the actual operating practice and available technology indicate this is not needed. The first and primary responsibility is for the *initiating* station to insure the channel is clear before requesting a session. This is the same procedure which is (*or should be!*) used to initiate ANY communication session. For digital modes this requires some skill in signal identification but new software and signal processing techniques effectively aid in detecting busy channels. The current state of the art does permit good (but not perfect) automatic channel busy detection which dramatically reduces the chance of the often exaggerated "hidden transmitter" interference problem.

Experiments I performed during March and April 2005, while testing a new digital protocol, SCAMP, proved that effective non-proprietary automatic DSP-based channel busy detection was practical and effective for widely different modes (CW, PSK, SSB Voice, Pactor I, II, III, RTTY, MFSK, Digital Voice etc). The current regulation confining high bandwidth data to small slices (5-15 KHz) of spectrum that were set aside for fully automated (computer to computer) transmission is outdated, not effective, and far too rigid to be included in current amateur regulations. There are a number of opponents to RM-11306 that claim that allowing data in other segments will lead to a rampant takeover of the bands by so called "ROBOTS". This is clearly a distortion of the truth and is not based on facts or sound engineering principals. The fact is that there have been very few legitimate complaints of interference from semi automatic station (stations replying to a connection request from a live operator) and no one has been cited by the FCC. The majority of interference issues are due to two well known poor operating practices having nothing to do with automation:

a) The manned station control operator initiating the session did not listening and wait for a clear frequency before transmitting.
b) Operating with a receiver bandwidth well in excess of good communication practice just to view multiple adjacent sessions on spectrum displays.

3. SUMMARY

The history of amateur communications has always been one of co-operation, adaptation, innovation and experimentation, and it should not be burdened with rules specifically designed to protect or enhance one segment's favorite mode or operating practice. RM-11306 is a welcomed and needed step toward modernizing our amateur rules and eliminating micro management of amateur operating practices.

Respectively submitted, Gerald F. Muething Jr., KN6KB
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